$KMnO_4$ and BaO_2. For BaO_2 v passes a maximum due to the reversibility of the reaction $BaO_2 \rightleftharpoons BaO + 0.5\ O_2$, since with increasing pressure the decomposition of BaO_2 is inhibited. For $KClO_4$ v is independent of δ in the range $\delta = 0.5 - 0.9$. For high values of p and v the product $v\delta = f(\delta)$ however passes a maximum. This is explained by heat convection and - for lower values of δ - by heat transfer to the walls. The fact that v approaches a constant value differing from zero if $d \longrightarrow \infty$ only holds for systems with continuous contact surface between the two reagents. In the usual systems with chaotic arrangement of the particles the combustion extinguishes if the size of the particles exceeds a certain critical value. The curve of the dependence v on the particle size d (Fig 3) is S-shaped for systems with continuous boundaries between fuel and the oxidant, whereas for chaotic mixtures with small d it forms a step and breaks off from d at a critical value. There are 3 figures.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences, USSR)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103110010-4

69972

S/170/60/003/01/16/023
B022/B007

11.1000

AUTHOR: Bakhman, N. N.

TITLE: The Optimum Angle of Inclination of Photographic Recording When Measuring the Combustion Rate

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1960, Vol. 3, No. 1, pp. 94 - 97

TEXT: In the present paper, the problem is dealt with at what angle of inclination $\varphi = \varphi_{opt}$ the error in the determination of flame velocity by means of photographic recording will be the smallest. The dependence φ_{opt} and the amount of the error $\Delta_1 + \Delta_2$ of photographic recording at $\delta/L = 0.001$ in dependence on h/l is given (Fig. 1). The amount of the error caused by the curvature of the slot (Fig. 2) is calculated from the theorem of the sines (equations 4,5). The dependence of φ_{opt} and of the error in photographic recording $\Sigma\Delta_i$ at $\varphi = 45°$ and $\varphi = \varphi_{opt}$ on the angle of curvature ϑ of the slot with respect to its calculated position is given in Fig. 3. It follows from these calculations that the

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B022/B007

optimum angle of inclination of the camera to the direction of motion of the film, at which measuring errors are the lowest, may be considerably less than 45°. In many cases it should actually not be greater than 15 to 20°. There are 3 figures.

ASSOCIATION: Institut khimicheskoy fiziki, g.Moskva (Institute of Chemical Physics, City of Moscow)

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Card 2/2

82522

S/020/60/133/04/24/031
B004/B056

11.8000

AUTHORS: Bakhman, N. N., Belyayev, A. F.

TITLE: The Effect of Particle Size Upon the Combustion Rate of Mixtures Containing $KClO_4$ as the Basic Ingredient

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 133, No. 4, pp. 866 - 868

TEXT: The authors describe preliminary results of their attempts to derive a relation between the combustion rate u and the degree of heterogeneity of solid heterogeneous mixtures. For the case in which one of the two components of the mixture consists of a small fraction of particles of an average size d, whereas the second component is plastic and consists of particles which are considerably smaller than d, or pass more easily into the gaseous phase than the first component does, the degree of heterogeneity is determined only by d. The function u(d) was studied in mixtures of crystalline $KClO_4$ with bitumen, "goudron", or plexiglas. Of $KClO_4$ three sieved-out fractions with d = 1.7, 0.2, and 0.07 mm, as well

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The Effect of Particle Size Upon the Combustion Rate of Mixtures Containing $KClO_4$ as the Basic Ingredient

S/020/60/133/04/24/031
B004/B056

as a fraction (d = 0.01 mm) crushed by means of a vibration mill were used. The organic fuel was diluted with a solvent, mixed with $KClO_4$, dried, and pressed to a relative density of 0.98 - 1.00 (in the case of plexiglas, 0.90). The combustion rate was photographically recorded in a nitrogen atmosphere at pressures of $0 \leq p \leq 125$ atm. In the present paper, the authors investigated only the state of the uniform combustion in layers. Fig. 1 shows the function u(p) for a stoichiometric mixture of $KClO_4$ with bitumen for various particle sizes of $KClO_4$. Fig. 2 shows the function u(d) for p = 1, 3, 5, and 10 atm. For small particle sizes ($d \leq d_{min}$), u no longer depends on d. The following is derived for d_{min} from the equality of the mixing zone l_{mix} of the vapors with the heating zone l_{heat} of the vapors ($l_{mix} \sim l_{heat}$): $l_{mix} \sim ud^2$ and $d_{min} \sim 1/u$ (2). For each pressure there exists a certain range of d in which u depends in a high degree on d, whereas outside this range, u either does not depend on d

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The Effect of Particle Size Upon the Combustion Rate of Mixtures Containing $KClO_4$ as the Basic Ingredient

S/020/60/133/04/24/031
B004/B056

at all ($d \leq d_{min}$) or is only very little influenced by d (Large d). The authors compare these results with those in the papers by O. I. Leypunskiy (Ref. 1) and B. V. Novozhilov (Ref. 3), in which a dependence $u \sim 1/d$ was reported to exist. As in these papers experiments were carried out with non-gasifying fuel, the authors carried out additional experiments with two mixtures of KNO_3 and charcoal, where in one mixture d was $\sim 10 - 20\mu$, and in the other d was $\sim 400\mu$. Also in these experiments only a slight dependence of u on d was observed. The papers of Refs. 1, 3, thus, do not agree with the experimental data, and the theoretical model of the combustion of mixtures must be thoroughly revised. There are 2 figures and 3 Soviet references.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

PRESENTED: March 12, 1960 by V. N. Kondrat'yev, Academician

SUBMITTED: March 10, 1960

Card 3/3

27649
S/024/61/000/004/007/025
E194/E155

AUTHORS: Bakhman, N.N., and Polikarpov, D.P. (Moscow)

TITLE: Heterogeneous combustion in a system with condensed components

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1961, No.4, pp. 37-42

TEXT: This article describes investigations of flame propagation along flat and cylindrical surfaces of contact between a number of solid inorganic oxidising materials which cannot burn when pure ($KClO_4$, $KClO_3$, $KMnO_4$, BaO_2) and the following solid fuels: polymethylmethacrylate, polyethylene, polystyrol, polyvinylchloride and others. The tests were made in nitrogen atmosphere at pressures between 0 and 100 atm. The system was ignited by a nichrome heating coil on the upper end. Combustion was usually energetic with a large flame. A wedge-shaped furrow is formed in the layer of fuel and it moves together with the flame. The oxidation products used, after combustion, give rise to condensation products which distort the shape of the furrow formed in the layer of oxidising materials. Thus when $KClO_4$ and

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27619

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E194/E155

$KClO_3$ are burned, large drops of KCl are formed which cover a considerable part of the surface of fresh oxidising material. The relationship between the speed of propagation and the dimensions of the layer of oxidising material are first considered. Tests were made in a system consisting of a flat disc of variable thickness of oxidising material between two thick layers of fuel. The flame velocity was measured photographically, and curves are plotted of the relationship between the rate of propagation and the thickness of the oxidising material sample. A number of experimental factors are discussed, including the influence of the chemical nature of the components, the influence of pressure, and that of the relative density of the oxidising material. Tests of the combustion of films of variable thickness deposited on a thick backing are described. The shape of the furrow formed by combustion in a flat sheet of polymethylmethacrylate with $KClO_4$ was measured. The angle of combustion α which is the angle between the tangent to the profile of the furrow at a given point and the direction of propagation of the flame, diminishes steadily as the distance from the start of the flame increases. As the rate of propagation of the flame increases the thickness of the layer of

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E194/E155

oxidising material is reduced and the angle of combustion becomes more acute, i.e. the furrow becomes deeper. It is concluded that the propagation of flame along a surface of contact between a solid fuel and an oxidising substance, under the conditions used, involves gasification of components by heat from the flame; mixing due to interaction between flows moving in different directions and due to molecular diffusion; heating of the decomposition products of the initial components and subsequent combustion. It is difficult to explain the physical meaning of the rate of flame propagation along the surface of contact. However, the following conclusions may be drawn. The rate of flame propagation essentially depends only on those processes which take place in a small zone near the flame tip. Some conclusions about the meaning of the flame propagation speed may be based on measurements of the shape of the furrow formed in the sheet of fuel as combustion proceeds. The shape of the furrow in the layer of oxidising material cannot be measured reliably because of condensed combustion products. For the shape of the groove to be steady, in unit time all points on its surface should be displaced

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in the direction of flame propagation by equal amounts and, therefore, for any point of the contour:

$$\frac{u}{v} = \sin \alpha \qquad (1)$$

where: u is the normal rate of gasification, and α is the angle of combustion of the fuel at the given point. The normal rate of gasification is simply related to the heat flux q from the flame by the expression:

$$\rho u \left[c(T_n - T_0) + \lambda \right] = q \qquad (2)$$

in which all magnitudes relate to the hot fuel, T_n is the surface temperature and λ the specific heat of gasification. These values depend very little on u and, therefore, u is approximately proportional to q. By means of expressions (1) and (2) the heat flux at any point may be determined from the shape of the furrow. In particular, where the surface of the furrow becomes almost parallel with the initial surface of the plate (combustion angle nearly zero) the heat flux also tends to zero.

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Heterogeneous combustion in a system...

At the actual tip, Eq.(1) should give either $u_* = v$, $\alpha_* = \pi/2$ or $u_* < v$, $\alpha_* = \arcsin u_*/v$. In the first of these cases, v is the normal rate of combustion which is a maximum in relation to all the remaining points on the contour of the furrow. In the second case v is the rate of flame propagation on the surface of the fuel. Examination of processes on the flame tip requires rather precise tests and may lead to different results for different systems. The second case considered above appears the most probable for the system of methylmethacrylate and $KClO_4$ which was the one most studied. In many cases the tip may be considered as a special point, whose speed of motion depends on the pressure p, and the typical dimension of the layer of the component d. The rate is different from the normal rate of gasification at quite a small distance from the tip.

There are 7 figures and 1 Soviet reference.

SUBMITTED: July 30, 1960

Card 5/5

22001
S/076/61/035/004/008/018
B106/B201

11.7100

AUTHOR: Bakhman, N.N.

TITLE: Ignition rate of gunpowder in a loose envelope

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 4, 1961, 848 - 849

TEXT: The ignition rate v in gunpowder combustion, i.e., the velocity of the flame along the free powder charge surface adjoining the gas chamber, is frequently higher than the normal rate of combustion v_n. A.F. Belyayev and A. I. Korotkov (Ref. 1: O zavisimosti skorosti vosplameneniya ot davleniya, "Fizika vzryva", Izd-vo AN SSSR, sb. No. 3, str. 116) explain this fact chiefly by the circumstance that the charge due to the dynamic pressure increase above the burning surface, has the hot combustion products flowing round it (the effect of convection can be kept off by choosing a charge that burns from top to bottom). The proof for this assumption can be found in the circumstance that the pressure field and the velocity field of the gas near the burning part of the charge, and thus also the ignition rate must be highly dependent upon the geometrical conditions

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B106/B201

Ignition rate of gunpowder ...

in the neighborhood of the charge. The author has carried out a series of experiments, where cylindrical charges of ballistite powder with diameter d have been arranged coaxially in differently wide and stable cylindrical envelopes made of glass or plexiglass and ~10d long. The lower end of the envelopes was closed, while the upper, open end was in one plane with the upper end of the charge. The distance Δ between the envelope and the surface of the powder charge differed in the various experiments. The ignition rate v as a function of the distance Δ was measured in nitrogen atmosphere by a photorecorder. At not excessively small values of Δ v remains constant until the end of combustion both at p=1 at and at p=100 at. At $\Delta \ll 1$ mm and p=100 at by contrast, an appreciable period with $v \sim$ const was ascertained in only part of the experiments, while in the rest of the experiments the rate was found to grow from the beginning of combustion. The figure shows the experimental results at p=1 at. The ratio of the ignition rate v for the distance Δ concerned to the ignition rate v_∞ of the bare charge ($\Delta = \infty$) is plotted on the ordinate, and Δ is plotted on the abscissa in mm. It may be seen from the figure that already at p=1 at a very highly increased ignition rate is attained in the

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Ignition rate of gunpowder ...

maximum of the curve $((v/v_\infty)_{max} \simeq 12$ at $\Delta \approx 0.35$ mm). At p=100 at the ratio v/v_∞ is with every value of Δ higher than it is at p=1 at, and at Δ = 0.1-0.2 mm has about the value 100 (the insufficient reproducibility of the experiments does not permit constructing the curve $v/v_\infty = f(\Delta)$ at small values of Δ). In some of the experiments, a half-ring was added near the bare charge and coaxially with it. When the flame passed this half-ring, a jump in the ignition rate appeared on the side of the charge facing the half-ring, the initial rate being restored thereupon. No such fluctuation of the ignition rate was observed on the opposite side of the charge. The experiments substantiate the view expressed in the above-mentioned paper (Ref. 1) that the combustion products flow round the charge. [Abstracter's note: essentially complete translation.] There are 1 figure and 1 Soviet-bloc reference.

ASSOCIATION: Akademiya nauk SSSR Institut khimicheskoy fiziki
(Academy of Sciences USSR Institute of Chemical Physics)

SUBMITTED: July 22, 1959

Card 3/4

21977
S/020/61/137/005/021/026
B101/B203

11.7300

AUTHOR: Bakhman, N. N.

TITLE: The role of convective mixing in burning condensed mixtures

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 5, 1961, 1141-1143

TEXT: The following problem is the subject of the present paper: When burning condensed mixtures, the dependence of the normal burning rate u_n on the particle size decreases considerably with sufficiently large particles (dimensions of some 100 μ and more). This effect is explained by the fact that, with sufficient particle size, convective mixing starts playing a certain role besides molecular diffusion. Two kinds of turbulence are assumed to be formed. The first is due to the fact that the initial mixture with irregular arrangement and shape of particles represents a "dormant" turbulence which is activated in the gasification of particles. This turbulence has no direct relation to the parameters (particularly Re) of gasification and combustion products. Its action is most intensive near the surface of the condensed phase (k-phase), and must be proportional to the particle diameter d. Besides, the usual

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turbulence proportional to the diameter G of the cylindrical charge occurs with sufficiently large Re. The causes of artificial ("dormant") turbulence are the nonparallelism and different velocities of flow of gasification products of the components. The surface of the c-phase facing the flame is no longer a plane, if d is sufficiently large. The unevenness of the c-phase increases with d. The direction $\vec{v}$ of the gas velocity is different for every point of the surface, which produces intermixture. For the absolute velocity of gasification products, the author writes down: $v_1 = \rho_1 u_1/(\rho_1)_g$, $v_2 = \rho_2 u_2/(\rho_2)_g$ (1), where ρ is the density of the condensed component, ρ_g is the density of the gasification product, and u is the gasification rate. The mean values of time $\bar{u}_1$ and $\bar{u}_2$ are proportional to each other and to u_n. The values of u_1, u_2, however, are different from each other so that $v_1 \neq v_2$. This produces mixing in tangential direction (perpendicular to $\vec{u}_n$) and convective mixing in axial direction (parallel to $\vec{u}_n$). Since $v_{1a} \neq v_{2a}$ (a = axial), either an elementary shock wave (at $v_{1a} > v_{2a}$) or an elementary

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rarefaction wave (at $v_{1a} < v_{2a}$) must run through the flow; the wave is reflected from the uneven spots of the c-phase, and gradually generates damped secondary, ternary, etc. waves. The author writes: $D_{turb} \sim d(v_1 - v_2)$ (2). Taking into account that $\bar{u}_1 \sim \bar{u}_2 \sim u_n$, the following is obtained from (1) and (2): $D_{turb} \sim du_n(\rho/\rho_g) \sim du_n/p$ (3). Since the coefficient of molecular diffusion is independent of d: $D_{mol} \sim 1/p$ (4), and u_n, as a rule, corresponds to $p^{0.5} - p^{0.7}$, it is concluded that the role of convective mixing increases with d and p. For a qualitative checking of Eq. (3), the author made experiments together with Yu. V. Frolov. By means of a movie camera, they determined the height h of the torch of cylindrical charges (G = 1 cm) consisting of a mixture of $KClO_4$ and bitumen, the $KClO_4$ particles having $d \simeq 10$, $\simeq 180$, $\simeq 1700$ μ. The torch burned in a large vessel filled with N_2 at 1 atm absolute pressure and 20°C. h was found to decrease with increasing d. Further, the author determined h(d) for the burning

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The role of convective mixing ...

of an individual "particle". $KClO_4$ powder was pressed into thick plexiglass cylinders (diameter 0.4-1.4 cm). G was set equal to d, $h \sim vd^2/D \sim ud^2/\rho_g D$ (5) was derived. It was found: $h \sim d$, which proved the important role of convective mixing. The author thanks A. S. Sokolik, O. I. Leypunskiy, and B. V. Novozhilov for a discussion. There are 1 figure and 2 Soviet-bloc references.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR
(Institute of Chemical Physics, Academy of Sciences USSR)

PRESENTED: December 2, 1960, by V. N. Kondrat'yev, Academician

SUBMITTED: November 3, 1960

Card 4/4

27880

S/020/61/140/001/017/024
B127/B101

11.6200

AUTHOR: Bakhman, N. N.

TITLE: Combustion kinetics of condensed mixtures

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 140, no. 1, 1961, 141 - 144

TEXT: The author studied the kinetics of mixtures in different states. The rate of combustion is generally determined by three processes: intermixing of components, their chemical reaction, and heat transfer to the new mixture. The author studied the conditions under which intermixing has no effect upon the rate of combustion. The article is divided into five parts: 1) He showed that only in certain cases the intermixing of mixture components does not influence the rate of combustion. In the "preparatory" zone, the components may change their state and form systems of different phases, where perfect intermixing is impossible, e. g., solid-gas. 2) The kinetics studied are only observable in systems with sufficiently small d (d denotes the grain size of solid components, $d \leq d_{min} > 10^{-8} - 10^{-7}$ cm). The author calculated d_{min} from the rate of

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Combustion kinetics of...

diffusion of the two gasified components, and obtained the following equation:

$$d_{min} \sim \frac{1}{m}\sqrt{\frac{\bar{\lambda}\bar{q}}{\bar{c}}}\sqrt{D_o \frac{RT_m}{Q} e^{-Q/RT_m}} \qquad (7),$$

where m is the combustion rate with respect to mass expressed in $g/cm^2 \cdot sec$; $\bar{\lambda}$ in cal/cm·sec·deg and $\bar{c}$ in cal/g·deg are values averaged over the "preparatory" zone; D_o is the diffusion coefficient. This equation is only valid if $\exp(-Q/RT_m) \gg \exp(-Q/RT_1)$. T_m and T_1 are temperatures in the reaction zone and in a subzone; $T_o < T_1 < T_m$; T_o is the temperature of the cold mixture. 3) d_{min} varies in the different temperature intervals, and depends on the state and physical properties of the components. 4) The author refers to O. I. Leypunskiy (ZhFKh, 34, no. 1, 177 (1960)) and B. V. Novozhilov (DAN, 131, no. 6, 1400 (1960)), where the difficult combustion of the solid - gas mixture is explained. In this case, the combustion rate depends on d. 5) The intermixing of components in the

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Combustion kinetics of...

"preparatory" zone is highly important for the determination of the normal rate of combustion. The rate of combustion is not constant as it is impossible to produce mixtures with particles of standard size. Nonetheless, the rate of combustion becomes constant if $d \leq d_{min}$. The author thanks A. G. Merzhanov, L. G. Bolkhovitinov, and S. S. Novikov for discussions of the results. There are 5 Soviet references.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

PRESENTED: April 13, 1961, by V. N. Kondrat'yev, Academician

SUBMITTED: April 8, 1961

Card 3/3

11.7200
11.2231

3860
S/170/62/005/007/001/010
B178/B104

AUTHORS: Polikarpov, D. P., Bakhman, N. N.

TITLE: Propagation of a flame along the surface of a metal contact with solid oxidizing agents

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 5, no. 7, 1962, 11-17

TEXT: The process of flame propagation along the surface of a metal contact (Al and W powder) with solid oxidizing agents ($KClO_4$, BaO_2, $Ba(NO_3)_2$, Ag_2O, PbO_2, MnO_2, CuO, Co_2O_3, PbO, Fe_2O_3, SnO, ZnO, and Cr_2O_3) was investigated. At low densities of the two components, the metal powder was put into a bag made of tracing paper and surrounded by a metal shell. The oxidizing agent was filled into the space between the bag and the shell. At a high density of the oxidizing agent ($\bar{\rho}$ = 0.95) and varying density of the metal powder, the oxidizing agent was pressed into a metal shell, and the metal powder was pressed into a hole drilled into the oxidizing agent. The experiments were carried out in air at zero pressure and in nitrogen at a pressure equal to or less than 100 atm. The velocity of flame

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Propagation was measured with the aid of two quartz filaments inserted into two holes 10 mm apart in the oxidizing agent. The mean velocity of flame propagation was measured with a photoresistor and loop oscilloscope. Combustibility was found to decrease with increasing amount of heat q consumed during the decomposition of a quantity of oxidizing agent than liberates 1 g-mole of O. Organic fuels behave similarly. As the relative density of the metal powder increases, its combustibility diminishes by reason of the considerable heat evolved. The extreme relative density δ at which combustion ceases is greater for Al than for W and increases with rising pressure. No such phenomenon can be observed in organic fuels. In the case of metal powder with moderately high δ, the velocity of flame propagation decreases with increasing thickness of the layer. The presence of pores in the metal layer can strongly affect the rate of combustion. If the melting point is considerably lower than the burning point, a liquid layer of particles will be formed on the surface. The reaction products are gaseous. Solid and liquid residues are left after the gasification of the oxidizing agent. The metal oxides of low-melting metals form a liquid residue whereas high-melting metals do not. Part of the decomposition products of the oxidizing agent are consumed in the reaction zone and the rest is carried away. The convective transfer of

S/170/62/005/007/001/010
B178/B104

oxidizing agent through the holes plays a significant role in the combustion of the metals. There are 3 figures and 3 tables.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR, g. Moskva (Institute of Chemical Physics AS USSR, Moscow)

SUBMITTED: October 25, 1961

Card 3/3

32841
S/020/62/142/002/022/029
B101/B144

11.7000

AUTHORS: Bakhman, N. N., and Kondrashkov, Yu. A.

TITLE: Model of a burning front of condensed mixtures

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no. 2, 1962, 377 - 379

TEXT: The model of a burning front which allows for the inhomogeneity of the mixture and permits to derive an equation for u(d) (u = burning rate, d = particle size), not contradicting experimental data, is investigated. For $d \leq d_{min}$, the burning front is plane. With increasing d, protrusions form at the burning front (Fig. 1). The burning rate is assumed to be kinetically determined by so narrow a zone at the flame protrusion A that $u \sim p^n \exp(-E/2RT_A)$, where T_A is the temperature in the center of A. For the heat balance at point A, one finds $\rho uQ + q_{diff} = \rho uc(T_A - T_o) + q_y$, where Q(in cal/g) is the thermal effect of the reaction in A, q_{diff} is the heat flow to A from the higher diffusion flame, $\rho uc(T_A - T_o) = \lambda(dT/dx)_A$

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Model of a burning ...

is the heat required for heating the mixture in A, and q_y is the laterally emitted heat, dependent on the slant ϕ of the burning front. ϕ is expressed by u and d; for small d, molecular heat conduction ($\lambda = \lambda_o$, λ_o being the heat conduction at d_{min}) is assumed, and for large d, convective heat conduction ($\lambda \sim udc\rho$) is assumed. When putting $q_{diff} \ll cuQ$; $T_o \ll T$, the functions $\log u = a - bud\left[1 - (u_o d_{min}/ud)^2\right]$ (11) and $\log u = a - \left[b'/(u_o d_{min})^2\right]$ $\left[1 - k'(u_o d_{min})^2\right]$ (12) are obtained for small and large d respectively. a and b are constants, and u_o is the burning rate at d_{min}. The values obtained from these equations agree well with experimental data (Fig. 2). The coefficient b decreases with increasing pressure: $b(sec/cm^2)$ is 39.7 at 5 atm, and 10.7 at 100 atm. Eq. (11) also reproduces well the experimentally observed decrease of u(p) with increasing d. There are 2 figures, 1 table, and 6 Soviet references.

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32841

Model of a burning...

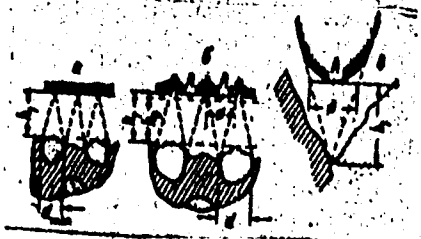
S/020/62/142/002/022/029
B101/B144

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

PRESENTED: August 1, 1961 by V. N. Kondrat'yev, Academician

SUBMITTED: July 28, 1961

Fig. 1. Behavior of the burning front at different particle sizes. (a) $d = d_{min}$; (б) $d > d_{min}$ $(d/d_{min} \sim 1)$; (в) $d \gg d_{min}$.



Card 3/4

BAKHMAN, N.N.

Increase of the rate of burning by the introduction of an inert additive. Dokl.AN SSSR 145 no.6:1328-1330 Ag '62. (MIRA 15:8)

1. Institut khimicheskoy fiziki AN SSSR. Predstavleno akademikom V.N.Kondrat'yevym.

(Combustion)

ACCESSION NR: AP4011438 S/0076/64/038/001/0041/0046

AUTHORS: Bakhman, N.N. (Moscow); Nikiforov, V.S. (Moscow)

TITLE: Condensed mixtures with strong burning rate dependence on the particle size of the components

SOURCE: Zhurnal fiz. khim, v. 38, no. 1, 1964, 41-46

TOPIC TAGS: burning rate, incendiary mixture, particle size, tungsten and potassium perchlorate, aluminum and iron oxide

ABSTRACT: Experiments were carried out with mixtures W + $KClO_4$ and Al + Fe_2O_3 to show that the burning rate (u) of condensed mixtures containing a non-volatile component depends strongly upon its dispersity. The burning rate of W + $KClO_4$ can be changed 40-50 fold, and of Al + Fe_2O_3, 20-30 fold by changing the particle size of the metal. If both components pass over into the gaseous state, the rate of burning is changed by only a few times (2-4) on changing the particle size of the components. The $u(d^{-1})$ curve for W + $KClO_4$ mix-

Card 1/2

ACCESSION NR: AP4011438

tures is shown in fig. 1. orig. art. has: 2 figures, 4 tables and 4 equations.

ASSOCIATION: Akademiya nauk SSSR, Institut fizicheskoy khimii (Academy of Sciences, Institute of Physical Chemistry)

SUBMITTED: 06Sep62 DATE ACQ: 14Feb64 ENCL: 01

SUB CODE: PH, MA NO REF SOV: 010 OTHER: 000

Card 2/2

BAKHMAN, N.N.; KONDRASHKOV, Yu.A.

Combustion of condensed three-component mixtures. Zhur.fiz.khim. 37 no.1:216-219 Ja '63. (MIRA 17:3)

1. Institut khimicheskoy fiziki AN SSSR.

ACCESSION NR: AP4022663 S/0207/64/000/001/0131/0134

AUTHORS: Bakhman, N. N. (Moscow); Belyayev, A. F. (Moscow); Lukashenya, G. V. (Moscow); Polikarpov, D. P. (Moscow)

TITLE: The relation between the combustion rate of ammonia perchlorate and its density

SOURCE: Zhurnal priklad. mekhan. i tekhn. fiz., no. 1, 1964, 131-134

TOPIC TAGS: combustion, combustion rate, casing, combustion heat, heat loss, condensed system, gas phase, solid phase, particle size, chamber pressure, porosity, density, relative density

ABSTRACT: The combustion rate (u cm/sec) of compacted systems depends on the relative density δ of the sample where δ is equal to the ρ/ρ_{max} ratio. Here ρ gm/cm^3 represents the actual and ρ_{max} the potentially possible density of the given sample. The shape of the u curve depends, in turn, upon the conditions under which the reaction takes place and on the existing heat losses. The present investigation was performed on compacted ammonium perchlorate in a constant pressure tank in an atmosphere of nitrogen. The first series of tests was conducted

Card 1/2

ACCESSION NR: AP4022663

on a charge 10 mm in diameter encased in an inert coat of cement-phosphate or glass. It was observed that low values of relative density δ diminished the combustion rate, the combustion even becoming incomplete at $\delta = 0.75$-0.65. In order to assess the role of heat loss, the second series of experiments was carried out in plexiglass containers with a 6-mm internal diameter. The result showed that with a lower δ the combustion rate was increased. In the third series of experiments, 2% hexamethylenetetramine were added to the ammonium perchlorate in a plexiglass casing. It was found that here a lowering of δ caused even a slight increase in the combustion rate. In the fourth series, 2% Cu_2O was added as a catalyst, which accelerated the reaction rate and reduced the zonal width of the reaction. The fifth series was conducted with pure ammonium perchlorate at a higher initial temperature. This caused the combustion rate to increase. The incorporation of small amounts of asphalt had an inhibitory effect on the combustion rate, while larger quantities enhanced it. Orig. art. has: 5 tables.

ASSOCIATION: none

SUBMITTED: 30Jul63 DATE ACQ: 08Apr64 ENCL: 00

SUB CODE: MA NO REF SOV: 000 OTHER: 002

Card 2/2

ZEL'DOVICH, Ya.B. (Moskva)

Note concerning the effect of a condensed residue on the dependence of the rate of burning on pressure. PMTF no. 6: 120-121 N-D '61. (MIRA 17:7)

BAKHMAN, N. N.

"Heat transfer during the combustion of condensed mixture."

report submitted for 2nd All-Union Conf on Heat & Mass Transfer, Minsk, 4-12 May 1964.

Inst of Chemical Physics, AS USSR.

L 13878-66 EWT(m)/FBA/ETG(m)-6/EWP(t) WW/RM

ACC NR: AP6004438 SOURCE CODE: UR/0414/65/000/003/0098/0099

AUTHOR: Bakhman, N. N. (Moscow)

ORG: none

TITLE: The controlling combustion zone

SOURCE: Fizika goreniya i vzryva, no. 3, 1965, 98-99

TOPIC TAGS: solid propellant, combustion, composite propellant, combustion instability

ABSTRACT: It has been previously established that the combustion of solid propellants takes place in several zones, one of which may control the burning velocity. In the present discussion of the conditions under which a single zone can control the burning velocity, Bakhman states that this is possible only with a flat, smooth burning surface which is obtainable through the combustion of a propellant with small-size particles. When the particle size exceeds a certain value or when a condensed residue is formed during combustion, the surface area and, therefore, the geometry of the surface will be a controlling factor in addition to the temperature and composition of the propellant. In such a case, the burning velocity cannot be controlled by a single zone. If a catalyst which accelerates the decomposition of the oxidizer is added, then small cavities will form on the surface because the oxidizer particles decompose faster

Card 1/2

Card 2/2

64
63
13

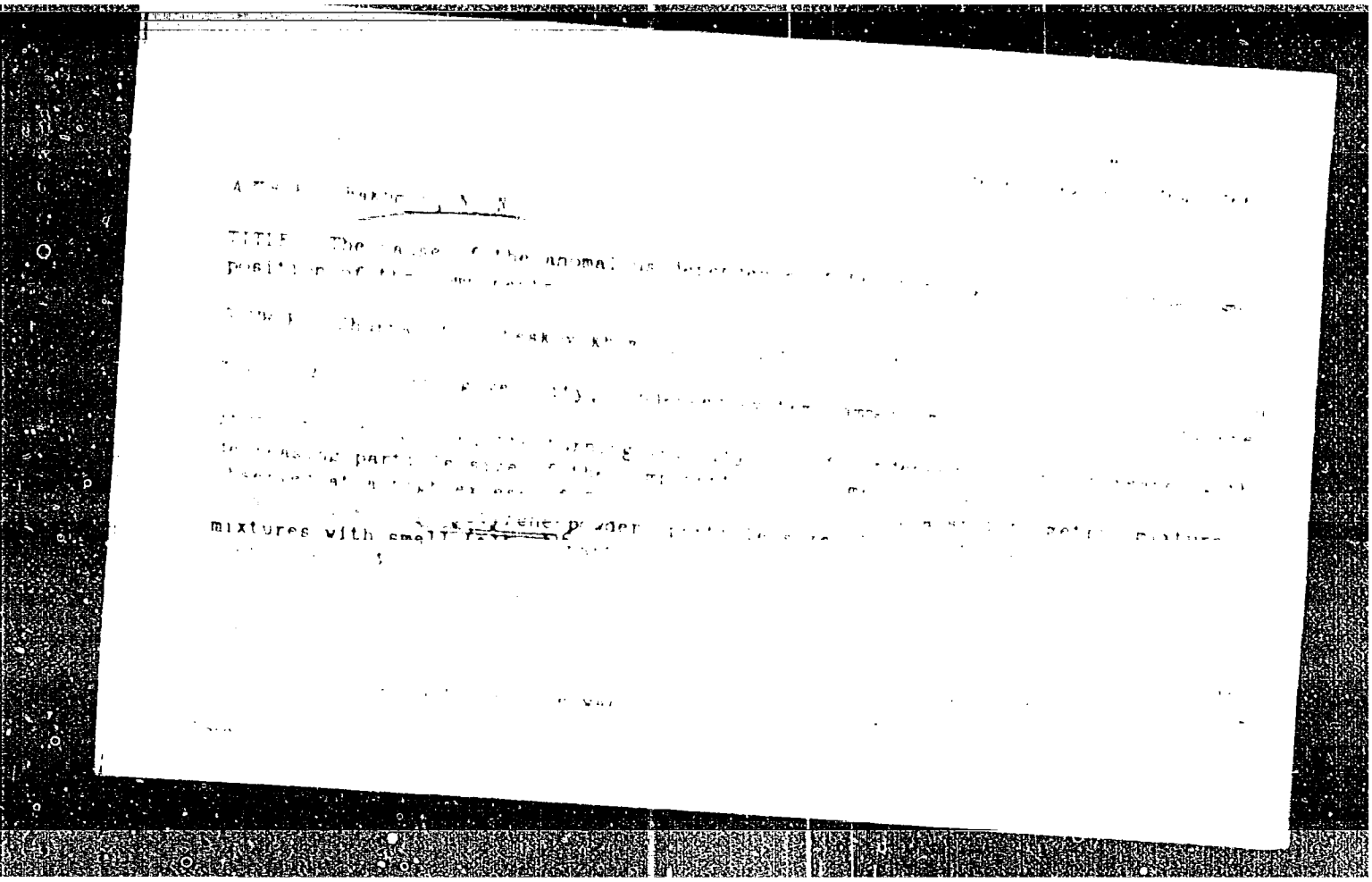
AT0/0-00

ACC NR: AP6004438

than the fuel particles gasify. Once more, in this case, the burning velocity will also be a function of the surface geometry. [PV]

SUB CODE: 21/ SUBM DATE: 30Nov64/ ORIG REF: 005/ ATD PRESS: 4194

Card TS 2/2



fuel particles which burn faster at the same fuel-oxidizer ratio. Orig. art. has 2 tables.

Card

ACCESSION NR: AP5009552

AUTHOR: Bakhman, N. N. (Moscow)

TITLE: On the calculation of the press

Card

L 42985-65

ACCESSION NR: AP5009552

ondary explosives and powders (~ 1 mm Hg for [illegible] like powder) [illegible] the author thanks A. [illegible] for suggesting the topic and [illegible]

ASSOCIATION: None

SUBMITTED: 05Mar64 ENCL: 00 SUB CODE: FP, WA

NR REF SOV: 005 OTHER: 000 ATD PRESS: 3238

Card 2/2

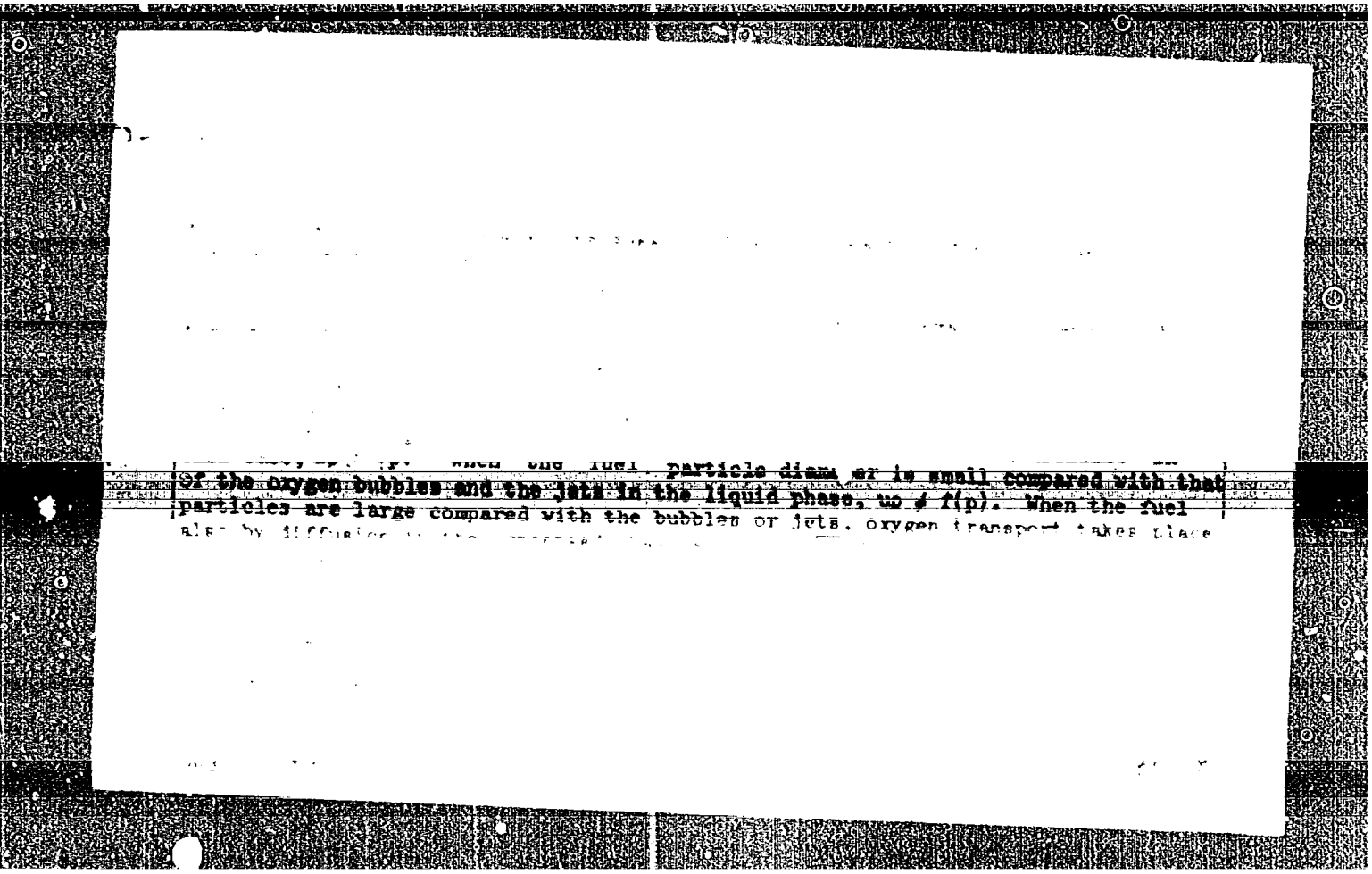
BAKHMAN, N.N.

One of the causes of manifestation of the anomalous dependence of the burning velocity on the disperaity of components. Zhur. fiz. khim. 39 no.3:764-766 Mr '65. (MIRA 18:7)

1. Institut khimicheskoy fiziki AN SSSR.

TITLE: Diffusion combustion regime in the presence of condensed reaction products

dependent on pressure p than that of mixtures with small particles. These findings contradict the Zel'dovich theory (Ya. B. Zel'dovich, Zh. eksperim. i teor. fiziki, 12, 498, 1942.) which assumed that when the reaction takes place in the gas phase, it



of the oxygen bubbles and the jets in the liquid phase, $w \neq f(p)$. When the fuel particles are large compared with the bubbles or jets, oxygen transport takes place

L 23051-66 EWT(m)/EWP(f)/EWP(j)/T/ETC(m)-6 WW/JWD/RM

ACC NR: AP6011503 SOURCE CODE: UR/0414/65/000/004/0044/0051

AUTHOR: Tsyrganov, S. A. (Moscow); Bakhman, N. N. (Moscow); Yevdokimov, V. V. (Moscow)

ORG: none

69-B

TITLE: Combustion of condensed systems with polydispersed components

SOURCE: Fizika goreniya i vzryva, no. 4, 1965, 44-51

TOPIC TAGS: solid propellant, propellant, combustion, combustion instability

ABSTRACT: Previous studies have shown that propellants containing polystyrene and NH_4ClO_4 with small size particles (15 μ) burn slower than those with larger particle size oxidizers (300—400 μ). This is explained by the fact that in combustion with the small particle oxidizer, the reaction in the interaction zone takes place at an excess of oxidizer. When part of the small size oxidizer is replaced by a larger size oxidizer, the mixture is enriched in fuel and the reaction takes place faster. To study this phenomenon in greater detail, experiments were made with an NH_4ClO_4-polystyrene mixture at oxidizer/fuel ratios of 1, 0.7, 0.5 and 0.2, with NH_4ClO_4-plexiglass mixtures at fuel/oxidizer ratios of 2, 1, and 0.7, and with perchlorate-asphalt

Card 1/3 UDC: 536.46

L 23051-66

ACC NR: AP6011503

mixtures. Nongelatinized mixtures and mixtures gelatinized with dichloroethane were used. The experiments were made at 5, 10, 25, 40, 70, and 100 atm. The NH_4ClO_4 had either large particles (300—400 μ), small particles (6 μ), or a 50—50% mixture of large and small particles. It was found that the propellants with the mixed particle oxidizer can burn at any rate ranging from that of the large particle size to that of the small particle size depending on the fuel/oxidizer ratio. The parameter Y characterizing the burning velocity was defined by the equation:

$$Y = \frac{u_{mix} - u_{lar}}{u_{sm} - u_{lar}}$$

where u_{mix}, u_{lar}, and u_{sm} are the burning velocities with mixed, large, and small oxidizer particles, respectively. It was found that when Y increases with increasing pressure, the dependence of the burning velocity on the pressure will be more pronounced with the mixed particle oxidizer than with either the small or larger particle oxidizer. However, when Y decreases as the pressure increases, the dependence of the burning velocity on the pressure is less pronounced with the mixed particle oxidizer than with either the large or small particle oxidizer. The fact that the burning velocity becomes less dependent on pressure

Card 2/3

L 23051-66
ACC NR: AP6011503

had also been previously noticed when a broad fraction of oxidizer particles was used. Orig. art. has: 1 table and 2 figures. PV]

SUB CODE: 21/ SUBM DATE: 27Mar65/ ORIG REF: 005/ OTH REF: 001

ATD PRESS 4234

Card 3/3

L 47134-66 EWT(l)/EWT(m)/EWP(j)/T LJP(c) WW/JW/JWD/GD/RM

ACC NR: AT6032001 SOURCE CODE: UR/0000/66/000/000/0252/0258

70
GG
B+1

AUTHOR: Bakhman, N. N.

ORG: Institute of Chemical Physics, AN SSSR (Institut khimicheskoy fiziki AN SSSR)

TITLE: Mass transfer in the combustion of condensed mixtures

SOURCE: Teplo- i massoperenos, t. 4: Teplo- i massoobmen pri khimicheskikh prevrashcheniyakh v tekhnologii (Heat and mass transfer, v. 4: Heat and mass transfer during chemical transformations). Minsk, Nauka i tekhnika, 1966, 252-258

TOPIC TAGS: solid propellant combustion, burning velocity, combustion instability, burning rate

ABSTRACT: Based on previous studies by the author, an evaluation was made of the effect of the solid propellant particle size on the burning velocity. The limiting cases considered were when $d \to 0$ and $d \to \infty$ (d = particle diameter). The burning velocity of propellants with a gasifying component can be changed only slightly by changing the particle size because the product $D\rho$ (D—diffusivity, ρ—density), which is proportional to the mass transfer rate, is large. The burning velocity of a propellant with a non-gasifying component can be increased by a

Card 1/2

L 47134-66
ACC NR: AT6032001

factor of 10 because D_ρ is small. Kinetic and diffusional combustion regimes are considered, and it is shown that when the oxidizer-fuel interface is divided by a thin polymer film, the burning velocity can be either decreased (polyterephthalate or polyfluoroethylene) or increased (polyethylene). These experiments made with plexiglass-$KClO_4$ showed that kinetic factors are also important when the diameter of the gasifying component approaches infinity. The effect of turbulent diffusion of the gasifying component becomes more pronounced as the particle size increases. It is concluded that the dependence of the burning velocity on the particle size is less pronounced with components which are gasified in the pre-reaction zone, because D_ρ is comparatively large. When D_ρ is small, this dependence becomes more pronounced. When the particle size is sufficiently small ($d < d_{min}$), mixing is completed in the pre-reaction zone, and, therefore, the burning velocity becomes independent of the particle size, and combustion takes place in a purely kinetic regime. Orig. art. has: 3 figures and 5 formulas.

[PV]

SUB CODE: 21/ SUBM DATE: 25Apr66/ ORIG REF: 009/ ATD PRESS: 5088

Card 2/2 afs

ACC NR: AP7000009 SOURCE CODE: UR/0076/66/040/011/2854/2859

AUTHOR: Tsyganov, S. A.; Bakhman, N. N.

ORG: Institute of Chemical Physics, Academy of Sciences, SSSR (Institut khimicheskoy fiziki Akademii nauk SSSR)

TITLE: Effect of ratio of components on the combustion rate of condensed mixtures

SOURCE: Zhurnal fizicheskoy khimii, v. 40, no. 11, 1966, 2854-2859

TOPIC TAGS: combustion rate, perchlorate, plexiglass, polystyrene, polyformaldehyde plastic, polypropylene plastic, graphite, tungsten

ABSTRACT: The combustion of mixtures of NH_4ClO_4 with fine powders of plexiglass, polystyrene, polyformaldehyde, polypropylene, urotropin, and bitumen and also mixtures of $KClO_4$ with plexiglass, polypropylene, urotropin, dextrin, graphite, and tungsten was studied in a 2-liter bomb in nitrogen. The maximum of the combustion rate u_{max} for mixtures of the two oxidizers with volatile mixtures (dextrin, urotropin, plexiglass) was found to lie relatively close to stoichiometry, and for mixtures with nonvolatile fuels (graphite, tungsten), to shift toward excess fuel. As the particle size of the oxidizer increases, there is a slight but distinct displacement of u_{max} toward excess fuel. As the pressure is increased in the case of NH_4ClO_4 + volatile fuel mixtures, u_{max} is not changed appreciably, but in the case of $KClO_4$ + volatile

Card 1/2 UDC: 541.12

ACC NR: AP7000009

fuel, u_{max} shifts toward excess fuel. Orig. art. has: 5 figures and 2 tables. [27]

SUB CODE: 21,07 SUBM DATE: 09Jul65/ ORIG REF: 004/ OTH REF: 009/
ATD PRESS: 5109

Card 2/2

L 30539-66 EWP(j)/EWT(m)/T RM/WW/JW/JWD

ACC NR: AP6019531 SOURCE CODE: UR/0020/66/168/004/0844/0845

AUTHOR: Bakhman, N. N.; Kondrashkov, Yu. A.

ORG: Institute of Chemical Physics, Academy of Sciences SSSR (Institut khimicheskoy fiziki Akademii nauk SSSR)

TITLE: An expression for the burning velocity in the presence of simultaneously occurring homogeneous and heterogeneous reactions

SOURCE: AN SSSR. Doklady, v. 168, no. 4, 1966, 844-845

TOPIC TAGS: burning velocity, combustion theory, explosive mixture

ABSTRACT: Based on the Ya. B. Zel'dovich formula for the burning velocity of a homogeneous system (ZhETF 12, no. 11-12, 498, 1942), an expression was derived for the pressure dependence of the burning velocity ratio $Z = u'/u$; here, u is the burning velocity of a homogeneous system and u' is the burning velocity in the presence of particles of an additive (charcoal, Cu_2O, etc.) or particles formed during the combustion process in a homogeneous system. In the latter case, in addition to the homogeneous reactions, heterogeneous reactions also take place on the particle surface. Analysis of published experimental data on the burning velocities of various explosive and combustible mixtures (PETN + charcoal, $KClO_4$ + bitumen + W, NH_4ClO_4 + plexiglass + carbon or Cu_2O, and NH_4ClO_4 + paraformaldehyde) showed that the proposed expression is in a good agreement with the experimental results. Orig. art. has: 1 table and 6 formulas. [PS]

SUB CODE: 21/ SUBM DATE: 30Jul65/ ORIG REF: 003/ OTH REF: 001/ ATD PRESS: 5016

Card 1/1 UDC: 541.126.662.611/612

BAKHMAN, Tat'yana

"Skat" searches the deep. Voen. znan. 41 no.10:44 O '65.
(MIRA 18:10)

1. Chlen kluba "Skat", Tomsk.

BAKHMAN, V.

The receiver set as a sound generator. Radio no.7:45 Jl '53. (MLRA 6:7)
(Telegraph, Wireless)

USSR/Human and Animal Physiology. Digestion. T

Abs Jour: Ref Zhur-Biol., No 8, 1958, 36552.

Author : Bakhman, V.I.
Inst :
Title : Functional Changes in the Gastric Mucosa Following Pyloric Resection.

Orig Pub : V.sb. Klinika i lechenie zabolevanii zheludka.

Abstract: Mechanical stimulation (drainage) in 4 dogs with an isolated pyloric pouch, produced increase of spontaneous secretion. Subcutaneous injection of histamine (0.001 - 0.0015) did not have any effect on secretion. Bread and meat feeding inhibited it. In 2 dogs with isolated fundus pouches of Pavlov the author noted within 12-16 months after the removal of the pylorus the appearance in the fundus pouches

Card : 1/3

USSR/Human and Animal Physiology. Digestion. T

Abs Jour: Ref Zhur-Biol., No 8, 1958, 36552.

of a spontaneous secretion of an alkaline juice in proteolytic ferment and urea (11.5 mg). An alimentary stimulant under these conditions produced a secretion of an acid juice characteristic for the fundus pouch with the usual amount of urea (2.5 mg%) but with a somewhat shortened secretion of HCl (3-4 hours). In determination of the intrinsic factor ofCastle (by the rise in reticulocytes in rats after ingesting the resulting juice) from the whole stomach with a fistula in a dog, with esophagotomy, and from isolated pouches - pyloric and fundal - the antianomic factor was found only in the juice from the isolated pyloric pouch. In dogs, after removal of the pylorus, the intrinsic

Card : 2/3

USSR/Human and Animal Physiology. Digestion. T

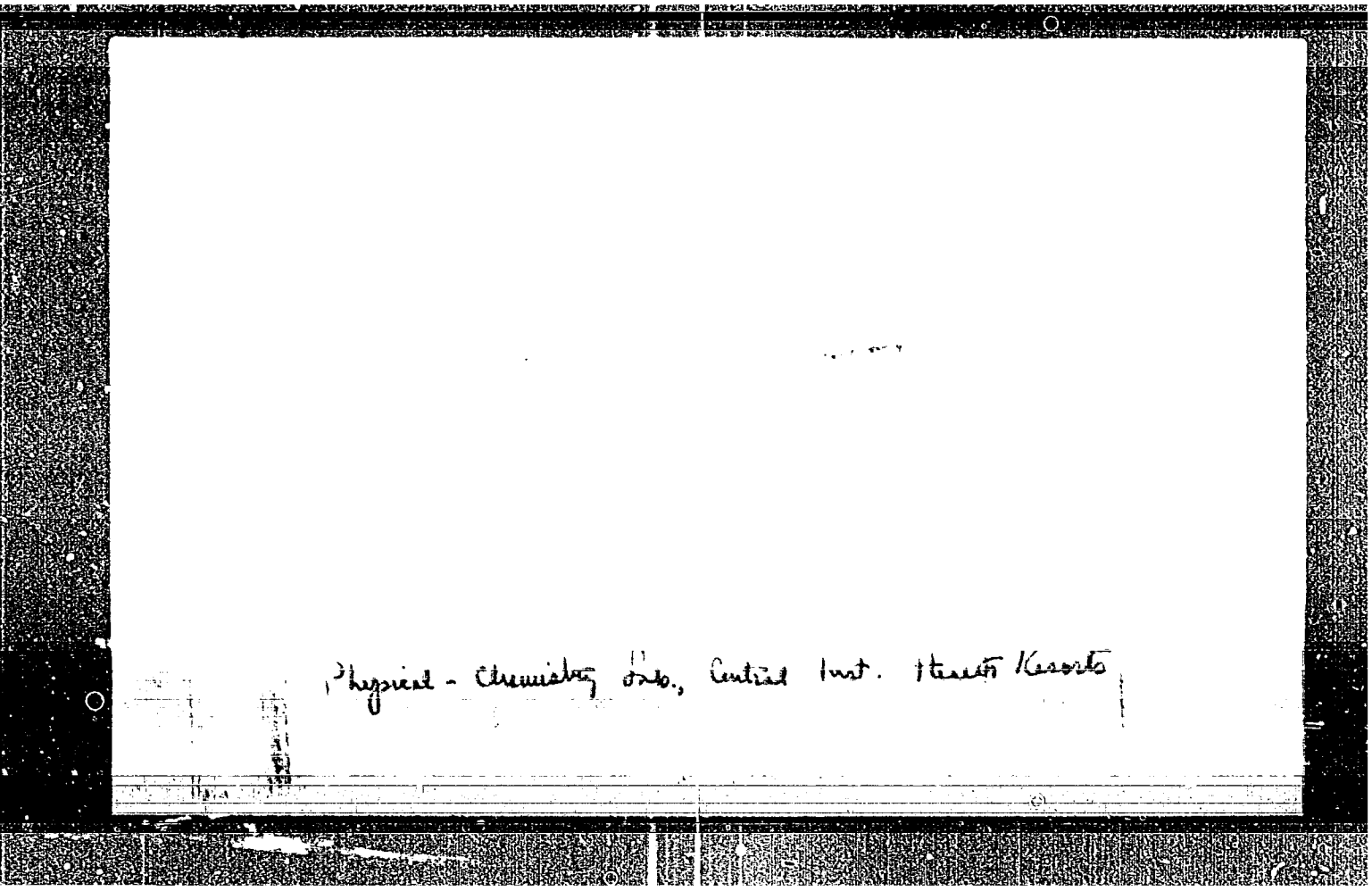
GONCHARENKO, V.G., dotsent; BAKHMAN, V.I., inzhener neftebazovogo khozyaystva.

Regeneration of truck and tractor oils. Neftianik 1 no.4: 3-4 Ap '56. (MLRA 9:10)

(Oil reclamation)

[illegible], V. [illegible]. "[illegible] sedimentation [illegible] geology", Izvestiia Vsesoiuz. Geograf. Obshchestva Izdat., Vol. IV, 1948, p. [illegible].

So: U- 3d, 16 April [illegible], (Letopis 'Zhurnal'nykh Statey, No. 15, 1949).



BAKHMAN, V.I.

USSR/Cosmochemistry - Geochemistry. Hydrochemistry. D

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 61331

Author: Bakhman, V. I., Prokof'yeva, Ye. F.

Institution: None

Title: Changes in Physicochemical Properties of Peat During Weathering

Original Periodical: Sb. Vopr. izucheniya kurort. resursov SSSR, Moscow, Medgiz, 1955, 266-271

Abstract: Different varieties of natural peat, acidic, ferrigenous, hydrogen sulfidic, calcium sulfatic and bland, are used for therapeutic purposes. Best therapeutic properties are possessed by decomposed peat of high moisture capacity, swelling capability and thermal capacity but low heat conductivity. In practice use is made of artificial weathering by exposure to air during several months. The authors have found that on weathering the peat changes some of its properties: plasticity, tenacity, colloidalness, etc, losing thereby its balneological value.

Card 1/1

BAKHMAN, V.I.; KRAPIVINA, S.S.

[Analysis of mineral waters] Analiz mineral'nykh vod. Moskva, Medgiz, 1956. 167 p. (MLRA 10:4)

(MINERAL WATERS--ANALYSIS)

BAKHMAN, Varvara Ivanovna; OVSYANNIKOVA, Klavdiya Andreyevna; NEVRAYEV, O.A., red.; PALEY, F.N., red.

[Analysis of therapeutic muds (peloids)] Analiz lechebnykh griazei (peloidov). Moskva, Medgiz, 1960. 130 p.
(RATHS, MOOR AND MUD) (MIRA 13:9)

BAKHMAN, Varvara Ivanovna; KRAPIVINA, Sof'ya Sergeyevna; FLORENSKIY, Kirill Pavlovich; PALEY, P.N., prof., red.; GROSSMAN, I.L., tekhn.red.

[Analysis of mineral waters] Analiz mineral'nykh vod. Izd.2. Moskva, Gos.nauchno-issl. in-t kurortologii i fizikoterapii, 1960. 223 p. (MIRA 13:5)
(Mineral waters--Analysis)

ORLOV, N.V.; KEVRAYEV, G.A.; ABROSIMOVA, Ye.K.; BAKHMAN, V.I.; KRYUCHKOVA, N.P.; MALAKHOV, A.M.; OVSYANIKOVA, K.A.; SEROV, S.I.; FEDOTOV, I.F.; SHEFER, D.G.; SHUSHAKOV, A.P.

V.V. Epshtein; obituary. Vop. kur. fizioter. i lech. fiz. kul't. 25 no. 5:478-479 S-O '60. (MIRA 13:10)
(EPSHTEIN, VLADIMIR VASIL'EVICH, 1902-1960)

IL'ICHEVA, Ye.N., nauchn. sotr.; SHVAREVA, Yu.N., nauchn. sotr.; KURASHOV, S.V., red.; GOL'DFAYL', L.G., red.; POSPELOVA, G.N., red.; Prinimali uchastiye: BAKHMAN, V.I., kand. khim. nauk, red.; IVANOV, V.V., kand. med. nauk, red.; KARAYEV, R.G., kand. med. nauk, red.; LARICHEV, L.S., red.; NEVRAYEV, G.A., red.; OPPENGEYM, D.G., kand. med. nauk, red.; POLTORANOV, V.V., red.; CHUBUKOV, L.A., doktor geogr. nauk, red.; VUL'FSON, I.Z., red.; KUZ'MINA, N.S., tekhn. red.

[Health resorts of the U.S.S.R.] Kurorty SSSR. Moskva, Medgiz, 1962. 797 p. (MIRA 15:11)
(HEALTH RESORTS, WATERING PLACES, ETC.)

IVANOV, V.V.; NEVRAYEV, G.A.; TOLSTIKHIN, N.I., retsenzent;
BAKHMAN, V.I., retsenzent; BOLASHOV, L.S., retsenzent;
BEDER, B.A., retsenzent; VALEDINSKIY, V.I., retsenzent;
OBROSOV, A.N., prof., otv. red.

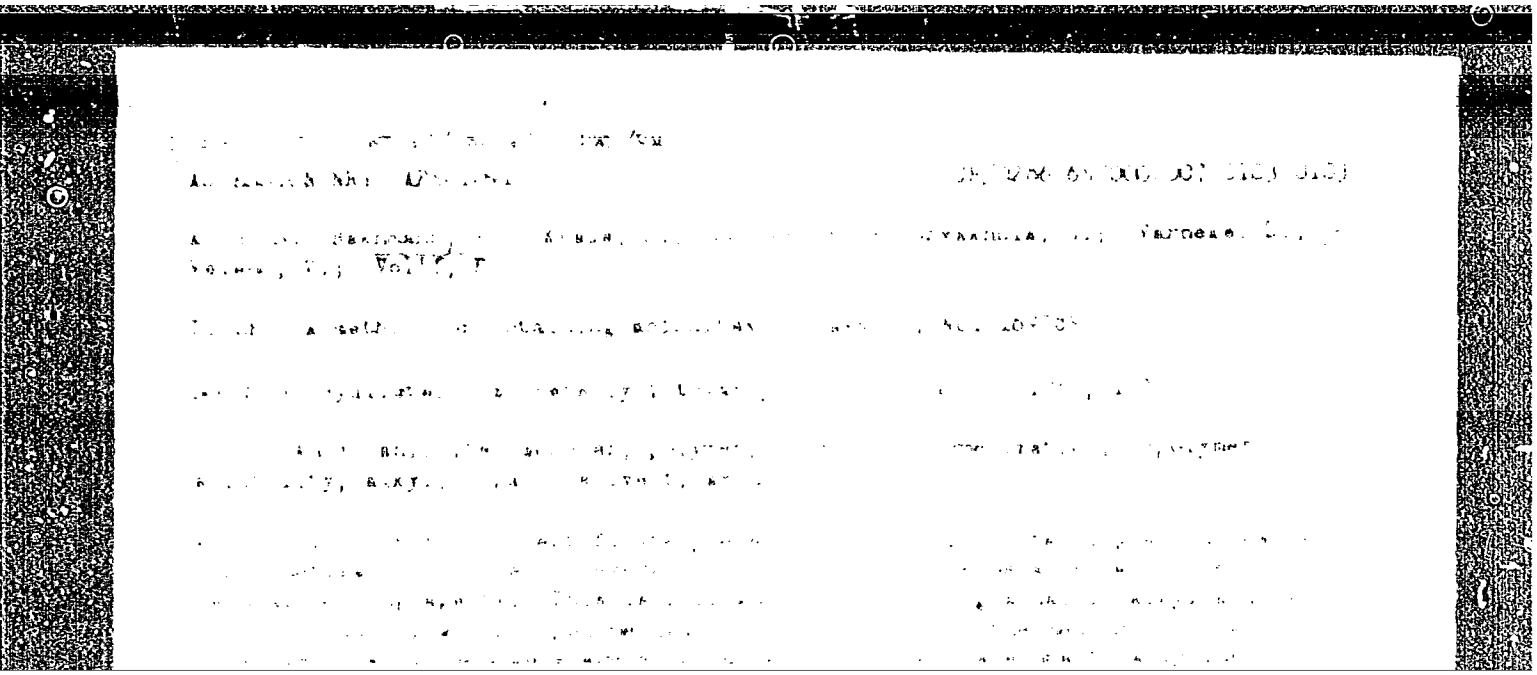
[Classification of underground mineral waters] Klassifikatsiia podzemnykh mineral'nykh vod. Moskva, Nedra, 1964. 166 p. (Ocherki po mineral'nym vodam SSSR, no.1)
(MIRA 18:4)

1. Chlen-korrespondent AMN SSSR (for Obrosov).

NEVRAYEV, G.A., red.; BAKHMAN, N.I., red.; VALEDINSKIY, V.I., red.; GAVRILOV, N.A., red. [deceased]; IVANOV, V.V., red.

[Materials on the study of therapeutic mineral waters and muds and on balneotechnics] Materialy po izucheniiu lechebnykh mineral'nykh vod i gryazei i balneotekhnike. Moskva, 1964. 14- p. (MIRA 18:11)

1. Moscow. TSentral'nyy nauchno-issledovatel'skiy institut kurortologii i fizioterapii. 2. Otdel izucheniya kurortnykh resursov TSentral'nogo instituta kurortologii i fizioterapii (for Bakhman).



APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000103110010-4"

To increase the thermal stability of the strong sorbents, the solvents are added in the amounts of 0.25-10% by weight of the monomers.

ALEKSANDROVSKAYA, V.V.; BAKHMANOV, N.Ya.

Sanatorium founded by A.P. Chekhov. Vop. kur. fizioter. i lech. fiz. kul't. 25 no. 5:453-455 S-O '60. (MIRA 13:10)

1. Iz sanatoriya imeni A.P. Chekhova v Yalte.
(CHEKHOV, ANTON PAVLOVICH, 1860-1904)

S/048/62/026/002/009/032
B101/B102

AUTHORS: Bakhmat, A., Belogurov, V., Gromov, K., Zhelev, Zh., and Pelekis, L.

TITLE: Study of the Eu^{148} gamma spectrum

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 2, 1962, 217 - 220

TEXT: Eu^{148} was chromatographically separated from the rare earths obtained by bombarding a tantalum target with 660-Mev protons in the Dubna synchrocyclotron. The measurements were made with a scintillation coincidence spectrometer and a 50-channel analyzer. The following relative intensities were found:

Gamma-energy, kev	Relative intensity	Gamma-energy, kev	Relative intensity
1600	15 ± 5	~830*	12 ± 6
~1450*	4	725	22 ± 7
1330	8 ± 3	630	100 ± 20
~1200*	2	550	100
1030	14 ± 5	415	9 ± 4
920	20 ± 7		

Card 1/3

S/048/62/026/002/009/032
B101/B102

Study of the Eu^{148} gamma spectrum

* was found by spectrum analysis. The 830-kev line may be due to a Eu^{147} impurity. From the equal relative intensities of 550- and 630-kev gamma rays in the single spectrum and on coincidence with 725-, 920-, 1030-, 1330-, and 1600-kev rays it is concluded that the 415-, 725-, 920-, 1030-, 1330-, and 1600-kev gamma quanta are in a cascade with the 550- and 630-kev quanta, and that there occur no transitions to the 550-kev level with intensities comparable to those of the transitions mentioned above, except the 630-kev transition. The recording of summated spectra (summation on coincidence) indicated a distinct peak of the sum 630 + 550 - 1180 kev, and confirmed that the cascade contained 630 and 550-kev gamma quanta. The coincidence measurements suggest that levels with ~2510 and ~2780 kev are excited in the Eu^{148} decay (Fig. 4) There are 4 figures, 3 tables, and 6 references: 3 Soviet and 3 non-Soviet The three references to English-language publications read as follows: Schwerdtfeger, C. F., Funk, E. G., Mihelich, J. W., BAPS, 5, 425 (1960); Bhattacherjee, S. K., Baldev Sahai, Baba, C. V. K., Nucl. Phys., 12, no. 4, 356 (1959); Eldridge, I. S., Lyon, W. S., Nucl. Phys., 23, no. 1, 131 (1961).

Card 2/3

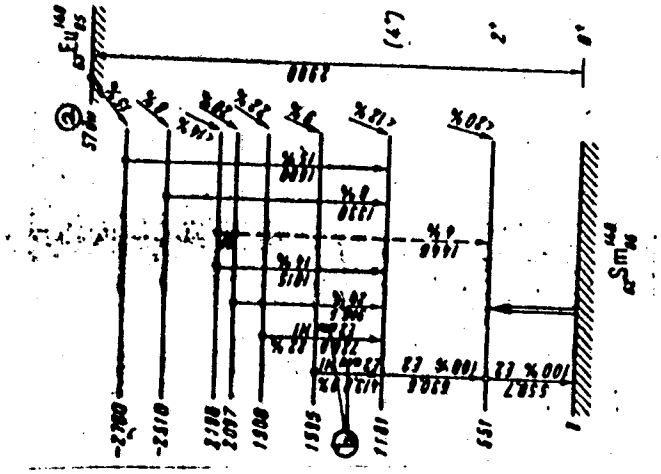
Study of the Eu^{148} gamma spectrum

S/048/62/026/002/009/032
B101/B102

ASSOCIATION: Institut fiziki Akademii nauk LatvSSR (Institute of Physics of the Academy of Sciences LatvSSR). Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

Fig. 4. Eu^{148} decay.

Fig. 4



Legend: (a) days; (b) or.

Card 3/3

S/197/62/000/002/002/003
B104/B138

AUTHORS: Bakhmat, A., Belogurov, V., Pelekis, L.

TITLE: Ag^{108} gamma emission

PERIODICAL: Akademiya nauk Latviyskoy SSR. Izvestiya, no. 2(175), 1962, 79 - 82

TEXT: In 1950-58, the authors determined the gamma spectrum of various "old" Ag sources in the range of 0 - 1100 kev with a double coincidence scintillation spectrometer. NaI(Tl) crystals (20x30 mm) with FEU-5 photo multiplier were used as detector. The resolving power of the analyzing and the controlling spectrometers were 9 and 10.5% respectively for the 661-kev line of Cs^{137}. Further, the spectra of the γ-γ coincidences and of the sum-coincidences were determined. The existence of a long-lived Ag^{108m} isomer is proved, in the spectrum of which lines with energies of 80, 430, 620, and 725 kev were observed. Coincidences of the 430-kev quanta with 620- and 725-kev quanta, of the 620-kev quanta with 430- and 725-kev quanta, and of the 725-kev quanta with 430- and 620-kev quanta were ascertained. 80-kev quanta did not coincide with quanta of the three /

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Ag^{108} gamma emission

other lines. B. S. Dzhelepov is thanked for advice and interest. There are 6 figures, 1 table, and 5 references: 3 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: M. A. Wahlgren and W. W. Meinke. Isomerism of Silver-108, Phys. Rev., 1960, 1, 1960; Phys. Rev. Letters, 1960, 4, 203.

ASSOCIATION: Institut fiziki AN Latv. SSR (Institute of Physics AS Latviyskaya SSR)

SUBMITTED: July 6, 1961

Card 2/2

5(3)

AUTHORS: Smol'yaninov, S. I., Bakhmat, A. D., Konatkin, A. P. SOV/32-25-2-45/78

TITLE: The Determination of Aniline Spots of Petroleum Products (Opredeleniye anilinovykh tochek nefteproduktov)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 2, p 220 (USSR)

ABSTRACT: The method under review requires as little as 0.15-0.3 ml of aniline and the substance to be investigated, as compared with 3-10 ml necessary when current methods are used. The aniline - petroleum mixture is not put into a test tube, but into a capillary sealed at the bottom with a diameter of 1.8-3.0 mm which is then attached to the thermometer. The two components are introduced into the capillary by means of a micropipet. Their ratio must be exactly 1:1. A nickel wire of 0.3 mm diameter is used for stirring. The determinations of petroleum products carried out with quantities of 0.15-0.3 ml in capillaries of 1.8-3.0 mm diameter furnished results which were in full agreement with the results obtained by analyses made by the current method. It is pointed out that it is also possible by the method described to determine the composition of dark petroleum products. In this case, however, the capillary must be sufficiently illuminated.

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The Determination of Aniline Spots of Petroleum Products SOV/32-25-2-45/78

ASSOCIATION: Tomskiy politekhnicheskiy institut (Tomsk Polytechnic Institute)

Card 2/2

POLIGUN, A.I.; GONCHAROVA, N.A.; BAKHMAT, V.F.

Refractometric study of complex formation in the system cadmium chloride - potassium bromide - water. Nauch. ezhegod. Khim. fak. Od. un. no.2:5-7 '61. (MIRA 17:8)

BAKIMATOV, A. N.

Bolezni krolikov, ikh preduprezhdenie i lechenie (Rabbit diseases, their prevention and treatment). Frunze, 1959, 52 pages with illustrations (Ministry of Agriculture of the Kirghizian SSR). Price 1 r. 35 k. 5,500 copies.

[illegible]MIK, I.Ye.; [illegible], G.A.; [illegible]KOV, B.A., ZAKHAROV, V.A.

Physical [illegible] studying the effect of temperature on the [illegible] property of [illegible] based on radon, thoron, and actinon. Biul.Ko[illegible]. po otr.obs. vozm.mol.form. no.3:[illegible]-61 '60. (MIRA 13:11)
(Radioactive substances)

BAKHMATOV, R.

Oil or coal? Znan.sila 35 no.5:5-7 My '60. (MIRA 13:7)
(Petroleum chemicals)

RAKHMATOV, S.K.

Jacquard fabrics. Tekst.prom. 14 no.11:46-47 N '54. (MLRA 8:1)

1. Glavnyy inzhener Pyarnuskoy l'nopryadil'noy tkatskoy fabriki.
(Jacquard weaving)

BAKHMATOV, Ya.K.

Automatic cut-out of an electric motor upon breakage of the conveyer chain. Sbor. vnedr. rats.pred. v les. i meb.prom. no.2:5-6 '59. (MIRA 13:8)

1. Arkhangel'skiy lesopil'no-derevoobrabatyvayushchiy kombinat No.4.
(Conveying machinery--Electric driving)

BAKHMATOV, Yevgeniy Konstantinovich; MAKSAKOV, M.F., red.

[Manual for the operator of a frame tenoner] Posobie rabochemu shiporeznogo ramnogo stanka. Moskva, Lesnaia promyshlennost', 1965. 56 p. (MIRA 18:2)

BAKHMATOVA, A.N., glavnyy vrach kurorta.

From the work practice of the Kislovodsk Scientific Health Resort Council. Vop.kur.fizioter. i lech. fiz.kul't. 21 no.3:94-95 Jl-S '56. (MLRA 9:10)
(KISLOVODSK--THERAPEUTICS, PHYSIOLOGICAL)

BUROV, A.G.; ASEYEV, P.A.; KONYAKHIN, Yu.Ya., inzh.; BAKHMATSKIY, P.A.; KOZYKIN, V.A.; KUZNETSOV, M.G., inzh.-mekhanik

Creative work of efficiency promoters. Put' i put. khoz. 9 no.11:23-24 '65. (MIRA 18:11)

1. Nachal'nik Vargashinskoy distantsii Yuzhno-Ural'skoy dorogi (for Burov). 2. Stantsiya Solntsevo, Yuzhnoy dorogi (for Aseyev). 3. Stantsiya Gruzskoye, Yugo-Zapadnoy dorogi (for Bakhmatskiy). 4. Nachal'nik Nizhneudinskoy distantsii Vostochno-Sibirskoy dorogi (for Kozykin). 5. Stantsiya Prokop'yevsk, Zapadno-Sibirskoy dorogi (for Kuznetsov).

Bakhmatulin, Kh.A.

BAKHMATULIN, KH.A.

Teoriia raskrytiia parashiuta. (Tekhnika vozdushnogo flota, 1940, no. 8, p. 79-89, tables, diagrs.)
Title tr.: Theory of parachute opening.

TL504.Th 1940

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

MOLOTKOV, R.V.; LYKOVA, T.A.; Prinimali uchastiye: KALININA, M.I.; SHERINA, O.G.; FROLENKOVA, A.A.; RAKHMENDO, D.E.

Compounding of unsaturated polyesters and epoxy resins. Plast. massy no.12:16-19 '60. (MIRA 13:12)
(Epoxy resins) (Esters)

BAKHMETOV, I.

PA 68T11

USSR/Aeronautics, Military Apr 1948
Radar, Airborne

"Aircraft Rada ," Capt I. Bakhmetov, Engr, 10 pp

"Vest Vozdush: Flota" No 4 (350)

Radar in aircraft, one of new ideas from World War II gave rise to a new field of science in the adaptation of radar to aircraft use. Describes aircraft radar interceptors, mounted radar apparatus as a method for defending tail and various types of apparatus developed to determine location of other planes.

68T11

BAKHMETOVA, T.Ye.; DOVGER, F.F.[deceased]; SHIRNOV, P.A.; PROKHOROV, A.N.; SHUMAKOV, I.A.; MIROSHINA, Yu.N.; SHAGALOV, Ye.S., red.;

[Album of sketches of stock equipment for the erection of structural elements]Al'bom chertezhei inventarnykh prispособlenii dlia vozvedeniia stroitel'nykh konstruktsii. Moskva. Pt.1.[Cradles, stagings, ladders, guard rails. Approved by a resolution of the technical administration No.163 of Dec. 30, 1959]Liul'ki, ploshchadki, lestnitsy, ograzhdeniia. Utverzhden reshoniem tekhnicheskogo upravleniia No.163 ot 30 dekabria 1959 g. 1962. 141 p. (MIRA 15:10)

1. Vsesoyuznyy institut po proyektirovaniyu organizatsii energeticheskogo stroitel'stva "ORGENERGOSTROI." Moskovskiy filial.

(Building)

BAKHMETOVA, T.Ye., inzh.; DOVGER, F.F., inzh.[deceased]; MIROSHINA, Yu.N., inzh.; PROKHOROV, A.N., inzh.; SMIRNOV, P.A., inzh.; SHUMAKOV, I.A., inzh.; SHAGALOV, Ye.S., red.

[Album of drawings of stock equipment for the erection of structural elements]Al'bom chertezhei inventarnykh prisposobleniĭ dlia vozvedeniia stroitel'nykh konstruktsiĭ. Moskva. Pt.2.[Scaffolding, trestles, trench shoring]Lesa, podmosti, krepleniia transhei. Utverzhden resheniem tekhnicheskogo upravleniia. No.61 ot 19 marta 1960 g. 1962. 113 p. (MIRA 16:2)

1. Vsesoyuznyy institut po proyektirovaniyu organizatsii energeticheskogo stroitel'stva "Orgenergostroy." Moskovskiy filial.
(Scaffolding) (Shoring and underpinning)

Bakhmetyev, M.M.

USSR / Radiophysics. Statistical Phenomena in Radiophysics. I-2

Abs Jour : Ref Zhur - Fizika, No 5, 1957, No 12431

Author : Bakhmetyev, M.M.

Inst : Not given

Title : Calculation of the Entropy for Certain Special Probability Distribution.

Orig Pub : Radiotekhn. i elektronika, 1956, 1, No 5, 613-622.

Abstract : It is shown that if the real distribution of probabilities can be approximated by a geometric progression (the envelope can be approximated by an exponential), the determination of the numerical value of the entropy becomes easier. The author then considers the behavior of the relative entropy upon increase of the number of events.

Card : 1/1

BAKHMET'YEV, M.

Some problems in cybernetics. Znan.sila 31 no.7:28-32 Jl '56. (MLRA 9:9)
(Cybernetics)

109-6-16/17

AUTHOR BAKHSHIYEV, M.M.

TITLE Estimation of the Accuracy in Determining Entropy when the Probability Distribution is Approximated by Geometrical Series. (Otsenka tochnosti opredeleniya entropii pri approksimatsii raspredeleniya veroyatnostey. geometricheskoy progressiyey - Russian)

PERIODICAL Radiotekhnika i Elektronika, 1957, Vol 2, Nr 6, pp 811-813 (U.S.S.R.)

ABSTRACT Reference is made to the paper by the author published in RE, 1955, Nr 5, p 613, and it is stated that in it no evaluation was given of the accuracy of the entropy value which is obtained by approximation. The present paper shall supplement this. In the earlier paper the author kept to $\sum_i p_i = 1$, where p_i is the probability of the event in the interval i. But on summating the number of events in the region i this condition was not used, but it was assumed that $\sum_i p_i \neq 1$.

Now the results obtained earlier are generalized for this case. For entropy the formula $H' = -\sum_i p_i' \log p_i'$ is obtained. Thus the entropy of the actual distribution is a total of the terms of the form $r_i = p_i \log p_i$. If the actual distribution is approximated by means of the geometrical series, the terms of sum $r_{ir} = p_{ir} \log p_{ir}$ are introduced instead of r_i, which somewhat differ from r_i. If sums are found in which no term of the same r_{ir} is smaller than the corresponding term of the actual sum, or in which every term is correspondingly greater, these sums will yield the upper and the lower limit

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Estimation of the Accuracy in Determining Entropy when the Probability Distribution is Approximated by Geometrical Series. 109-6-16/17

of possible values of the actual sum. It is shown how these terms are found, and a more or less suitable approximating geometric series is obtained. The value of approximation is determined for the entropy of actual distribution and thereafter those events are found for which the greatest relative difference between the actual and the approximate probability values is obtained.
(1 Slavic reference)

ASSOCIATION Not Given.
PRESENTED BY
SUBMITTED 5.10.1956
AVAILABLE Library of Congress.
Card 2/2

AUTHOR: BAKHMET'YEV,M.M., VASIL'YEV,R.R. PA - 2838

TITLE: Information Criteria for the Estimation of Telemetering Systems. (Informatsionnyye kriterii otsenki teleizmeritel'nykh sistem, Russian)

PERIODICAL: Avtomatika i Telemekhanika, 1957, Vol 18, Nr 4, pp 371 - 375 (U.S.S.R.)

Received: 5 / 1957 Reviewed: 6 / 1957

ABSTRACT: One of the most important criteria for the quality of Telemetering Systems (TMS) is the number of information units which is transmitted per unit of the entire frequency band. The number of informations at the output of the system can be computed if a number of parameters characterizing the TMS is known. Among them are: the frequency band of the signal, the average efficiency of the signal, interferences, etc. All TMS can be divided into two large groups: Systems with discrete and such with continuous effect. In both cases the number of informations at the output is a finite quantity. An accurate computation of this quantity may in some cases be complicated, but in the case of some assumptions computation of the velocity of the formation of information at the output of the TMS is not difficult. Examples for the determination of criteria for the evaluation of TMS operation are given. The formulae derived here may be used for the purpose of judging the TMS, without having to take the restriction which is due to the usual character of error distribution into account.

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PA - 2838

Information Criteria for the Estimation of Telemetering Systems.

The results obtained in this manner will be approximations. A table contains the evaluation of informations of the three telemetering systems in the U.S.S.R.: that of the firm of Brown Boveri, the English system, and that of the Institute for Automation and Telemechanics of the Academy of Science of the U.S.S.R. In an appendix the optimum distribution of the parameters in the case of a limitation of the amount of the mean square of the parameter and its maximum amount is determined. (1 table and 2 citations from Slav publications)

ASSOCIATION: Not given
PRESENTED BY:
SUBMITTED:
AVAILABLE: Library of Congress.

Card 2/2

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The ZA427 three-sided horizontal drilling machine. Biul. tekh.ekon.inform. no.3:20-22 '60. (MIRA 13:6)
(Drilling and boring machinery)

KARNAUKHOVA, M.V.; BAKHMET'YEVA, A.G.

Good book on primary wool treatment ("Primary wool treatment" by N.A.Zausailov, N.M.Artemov. Reviewed by M.V.Karnaukhova, A.G.Bakhmet'eva). Tekst.prom. 19 no.10:91 O '59.
(MIRA 13:1)

1. Glavnyy inshener Chernigovskoy fabriki pervichnoy obrabotki shersti (for Karnaukhova). 2. Sekretar' tekhnicheskogo soveta Chernigovskoy fabriki pervichnoy obrabotki shersti (for Bakhmet'-yeva).
(Wool)

KAZANSKIY, B.A.; DOBROSERDOVA, N.B.; BAKHMET'YEVA, G.S.; GOSTUNSKAYA, I.V.

Isomerization of hexenes in the presence of palladized coal. Neftekhimiia 3 no.4:503-506 Jl-Ag '63. (MIRA 16:11)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova, khimicheskiy fakul'tet.